

The Planets in Ancient Egypt **FREE**

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Summary

The five visible planets are certainly attested to in Egyptian sources from about 2000 BCE. The three outer ones are religiously connected with the falcon-headed god Horus, Venus with his father Osiris, and Mercury with Seth, the brother and murderer of Osiris. Clear attestations of the planets are largely limited to decoration programs covering the whole night sky. There are a number of passages in religious texts where planets may be mentioned, but many of them are uncertain because the names given to the planets are for most of them not specific enough to exclude other interpretations. There may have been a few treatises giving a more detailed religious interpretation of the planets and their behavior, but they are badly preserved and hardly understandable in the details.

In the Late Period, probably under Mesopotamian influence, the sequence of the planets as well as their religious associations could change; at least one source links Saturn with the Sun god, Mars with Miysis, Mercury with Thot, Venus with Horus, son of Isis, and Jupiter with Amun, arranging the planets with those considered negative in astrology first, separated from the positive ones by the vacillating Mercury. Late monuments depicting the zodiac place the planets in positions which are considered important in astrology, especially the houses or the place of maximum power (hypsoma; i.e., “exaltation”).

Probably under Babylonian influence, in the Greco-Roman Period mathematical models for calculating the positions and phases of the planets arose. These were used for calculating horoscopes, of which a number in demotic Egyptian are attested. There are also astrological treatises (most still unpublished) in the Egyptian language which indicate the relevance of planets for forecasts, especially for the fate of individuals born under a certain constellation, but also for events important for the king and the country in general; they could be relevant also for enterprises begun at a certain date.

There is some reception of supposedly or actually specific Egyptian planet sequences, names and religious associations in Greek sources.

Keywords: ancient Egypt, astrology, Horus, Isis, mathematical models, Osiris, planetary tables, religion, Seth

Subjects: History of Ideas about Planets and Planetary Systems

Introduction

Ancient Egyptian culture dates to well before the invention of the telescope, so only the five planets visible to the naked eye (Mercury, Venus, Mars, Jupiter, and Saturn) are relevant for it. What they knew about the planets and how they understood them is transmitted in texts and images that were rediscovered and translated since the 19th century by modern scholars. The

process is still ongoing; several important sources for planets in Ancient Egypt are not yet published. In cases where the author has knowledge of important unpublished material, it is briefly mentioned here.

Since there has not been an uninterrupted continuity of language and culture from pharaonic Egypt until modern times, understanding and interpreting the sources is hampered by several obstacles. Modern Knowledge of the Egyptian language (which in itself has a long history of evolution) is still far from perfect; finer nuances of lexical meaning are likely to be lost on interpreters, and especially for the earlier periods, details of the verbal system are also disputed between different scholars. Even independently of systematic dispute, since vowels are not written out, for strong verbs several different verbal forms look alike in writing. For understanding texts and images, the traditional hermeneutic methods of philology are still crucial.

Concerning the preserved sources, one must keep in mind that in Egypt, the dry desert climate plays a crucial role in preserving organic material, and this includes papyrus (a product of plant fibers), which is the most important text carrier for storage of information. Papyri are mostly preserved if deposited in tombs. But papyri dealing with planets have little reason to be deposited in tombs, so quite a bit of planet lore which was once present in Ancient Egypt is likely to be lost to the modern world. Documentation only becomes a bit better for the late periods when some preserved documents from temple libraries have been recovered, especially at Tebtunis and Soknopaiou Nesos (both in the Fayum region).

Such documents on papyrus are likely to have been at the core of the transmission of knowledge and concepts, also for dealings with the planets. Quite often, what is left to moderns are only those cases where astronomical images with accompanying text were monumentalized. This happened especially in temples built from stone and tombs cut into the rock where the ceilings could receive a decoration in relation to the sky, including stars and planets, and sometimes also on coffin lids.

In any case, it must be remembered that scholarship in Ancient Egypt was tied to temples; there were no independent researchers or secular universities. This means that considerations about nature typically lead to “religious sciences” where much stress was laid on linking natural phenomena with deities (von Lieven, 2000, pp. 186–190; von Lieven, in press).

History of Research

Astronomical depictions were among the earliest Egyptian monuments to be discussed by European scholars in the early 19th century, even before the decipherment of the hieroglyphs. They focused especially on the “round zodiac” of Dendara.¹ In connection with that, proposals for the identification of planets also were brought forward, and calculations for the date of the monument based upon supposed astronomical positions sprung up.

Carl Richard Lepsius, the founding father of German Egyptology, was able to single out correctly five figures on the round zodiac and other monuments which he could identify as depictions of the five planets (Lepsius, 1849, pp. 84–106). He tried to correlate them with some reports by Greek authors about Egyptian planet conceptions. Even though his identification of the group of five as such still stands, his individual proposals about which of them was which planet are largely incorrect.

Clarity concerning the names of the planets used in the latest phase of the Egyptian language (called demotic) was only reached in 1856, when Heinrich Brugsch studied a planetary table (see later) giving dates for the entry of the planets into the different signs of the zodiac (Brugsch, 1856). Astronomical reality made it easy then to see which of the Egyptian terms corresponded to which of the five planets.

From the demotic names, it was possible to go back because three of the five names had obvious links with the earlier forms, and distributing the remaining two was logical. An improvement to Brugsch's solution in that respect was given by Emmanuel de Rougé (1856, p. 25ff.). Brugsch later went back to the subject, assembled the images and texts then known, and also briefly summarized his results (Brugsch, 1883, pp. 63–79; Brugsch, 1891, pp. 335–339).

In their standard study of Egyptian astronomical texts and images, Otto Neugebauer and Richard A. Parker also treated the planets (Neugebauer & Parker, 1969, pp. 175–182). Otherwise, there has been hardly any in-depth study on the Egyptian planets, although they form part of publications of astronomical and astrological texts. The treatment by Lull (2016, pp. 175–185) is largely limited to the older periods and not free of problems and errors. Some overview is given in Quack (2018, pp. 85–93).

Designations of the Planets as Such

The Egyptians had a strong tendency to differentiate clearly between Sun and Moon, on the one hand (often called “the two luminaries”), and the five planets, on the other. At least for the late (demotic) phase of the Egyptian language, the term *the (five) living stars* is clearly attested as a specific term for the planets. It is uncertain if living stars also specifically designates the planets in the older periods during which this expression is not yet attested with the specific number five.

Otherwise, it is difficult to pinpoint any Egyptian word for planet; they may simply have been subsumed under stars. In one case, *discs* (*jtn.w*) is perhaps used for the planets (von Lieven, 2001, p. 277ff.; Wagner, 2016, p. 311ff). Some proposals for specific lexems have been made, but always on a very insecure basis, and the words proposed are all extremely rare in the texts.² One word, *gnm.w*, attested once in the Pyramid Texts,³ clearly designates some celestial entity; some scholars have understood it as planets (Faulkner, 1969, p. 83, note 3; followed by Lull, 2016, p. 176ff.), others as *decans* (a special group among the fixed stars) (Eyre, 2002, p. 7, 77, note 8), and yet others more neutrally and perhaps still too specifically as *the moving ones* (Goebs, 2008, p. 220). Another word, namely *tnm*, attested once in the Pyramid Texts and a directly parallel Coffin Text spell,⁴ has also been understood as *planet* (Krauss, 1997, p. 157). This is mainly because, on

the one hand, close to it in the text there is a mention of *the fifth one*, and, on the other hand, there is an option of translating the word as *the errant one* and thus bringing it into semantic similarity to the literal meaning of planet.

Rolf Krauss (1997, pp. 254–260), elaborating an earlier idea by Briggs (1952, p. 39, 49), has furthermore proposed to recognize *shd.w* as a general word for planets, but the evidence is circumstantial at best (Allen, 2002, p. 64ff.). Briggs based his proposal entirely on the fact that the *shd.w* were following the path of the Sun, but that would fit stars close to the ecliptic as well. One important part of Krauss's argumentation, namely that the celestial body in question was capable of crossing the ecliptic (Krauss, 1997, p. 256), should be looked at with serious circumspection, given that Krauss's argumentation for understanding the word in question as ecliptic has been seriously doubted by other scholars (Depuydt, 2000, pp. 81–85; Abbas, 2010, p. 25ff.).

Philippe Derchain has proposed that an inscription in the temple of Edfu contains *nmt.w* in the sense of *the marching ones* as a translation of the Greek expression ἀστέρες πλάνητες *wandering stars* for the planets (Derchain, 2002–2003, pp. 25–27). However, he has overlooked a probably better proposal concerning the passage in question not involving planets (von Lieven, 2000, p. 49ff., note 172).

The proposal of Lull (2016, p. 175) to postulate *'bw* as a word for planets is completely erroneous. In the passage in question (Pyramid Texts, §. 251a), what is really present is the compound preposition *m-'b*, *together with*, followed by simple *sb3.w n.w p.t*, *the stars of the sky*.

Names, Tutelary Deities, and Iconography of the Planets on Monuments with Astronomical Decoration

For the older periods, clear attestations of the planets, are restricted to one complex composition combining depictions with short labels, normally not more than names and epithets. This composition has been dubbed by modern scholars as the “classical Egyptian sky image” (Quack, in preparation, Chapter 1.3.1.). It appears mainly on the underside of coffin lids and the ceiling of tombs (of kings and high officials) and temple rooms. Its earliest fragmentary attestations date to *ca.* the 20th century BCE; at the moment, a fragmentary wooden coffin is known which was found at Assiut but left in situ and seems lost now (Gunn, 1926), and a Roman Period copy on papyrus from Tebtunis of the decoration of a (now destroyed) tomb of the Early Middle Kingdom, including an astronomical ceiling giving the name of King Amenemhet I (20th century BCE) (Osing & Rosati, 1998, p. 81ff., plate 8; pp. 92–94, plate 12), and also located at Assiut.

From the New Kingdom onward, examples are quite frequent (Neugebauer & Parker, 1969); well-known cases are the ceilings of the sarcophagus chambers of the tombs of the high official Senenmut (15th century BCE; Figure 1) and of King Seti I (early 13th century BCE). The astronomical depictions have been classified into several “families” by modern researchers, based especially on details of star names and iconography. There are five of them, sometimes with subtypes. Three of them belong more closely together and appear often in a common scheme

of decoration which the author calls “the classical sky image.” It is divided into a northern and a southern half. The northern half shows a number of constellations in the center (at least some of them are circumpolar), flanked to the right and the left by divine personifications of the days of the months. The southern half shows mainly the decans, a category of stars which were used for time measurement by the Egyptians. Among them, the main sequence can be differentiated from another one normally called the “triangle decans” because in a tabular arrangement of the decans, they are placed in the last 12 decades of the year in a triangular zone of an hourly table occupying from decade to decade one more hour of the night toward the end of the year. In this classical sky image, the planets are incorporated into the southern part after the regular decans. The normal order of the planets is Jupiter, Saturn, Mars, and then, after the triangle decans, Mercury and Venus. Such an arrangement differentiates between inner and outer planets, but otherwise does not follow an obvious astronomical criterion.

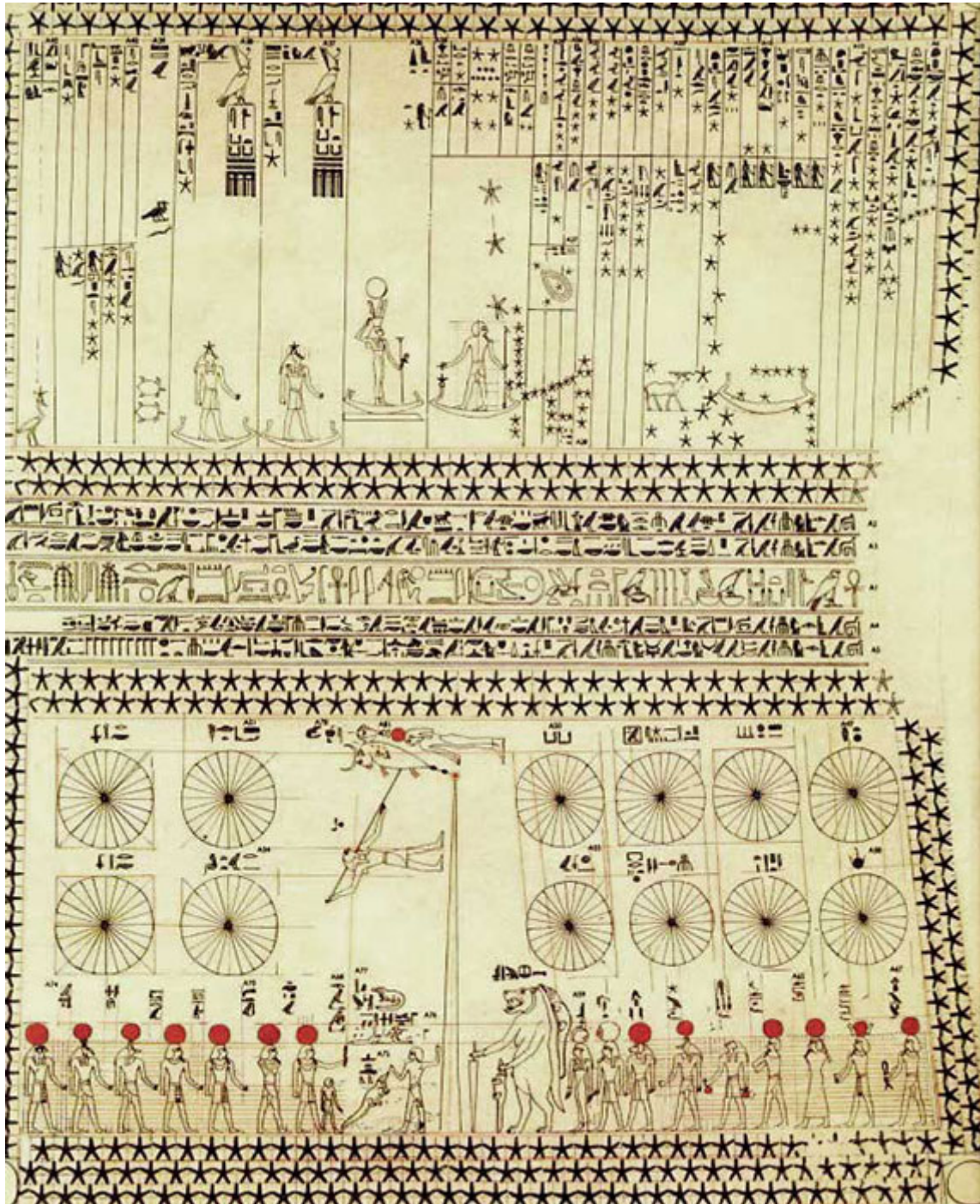


Figure 1. Astronomical ceiling in the tomb of Senenmut (the planets are in the top left). After <https://en.m.wikipedia.org/wiki/Decan#/media/File:Senenmut.jpg> <<https://en.m.wikipedia.org/wiki/Decan#/media/File:Senenmut.jpg>>.

One of these families, the “Senenmut family,” has the specialty that in its main type, Mars is missing. This fact has given rise to an effort by Ove von Spaeth to link the absence of Mars in the depiction with a phase of invisibility and to work out an exact astronomical date on that basis

(von Spaeth, 2000). His proposal met with quite immediate disapproval (Leitz, 2002; Belmonte & Shaltout, 2007). The absence of Mars is more likely to result from a damaged and incomplete model used by the craftsmen, as it can be seen in several other places in this composition.

The names of some of the planets in the older texts are etymologically not transparent, or the orthographies of the different families show variations which indicate uncertainties about the exact origin of a compound form whose individual parts could be segmented in different ways. In addition to their proper names, the planets also receive epithets. It should be stressed that in several cases, these epithets are written down in a garbled form, especially concerning the word sequence, but sometimes also displaying confusion between hieroglyphs of vaguely similar shape. This is a good indication that the preserved monuments are often the product of mechanical copying from models more than a genuine understanding of the contents.

The name of Jupiter is especially problematic in its transmission. In the astronomical depictions making use of the main Senenmut family, probably also the Seti IC family, it is consistently written “Horus who bounds the two lands.” A subgroup of it, however (Senenmut subgroup B), writes “Horus, the mystery of the two lands.” The New Kingdom members of the Seti IA family write “Horus who illuminates the two lands.” Late hieroglyphic sources give a writing which is ambiguous and could be understood either as “Horus who opens the secret” or as “Horus who illuminates the land.” The Demotic writings mostly give forms which may mean “Horus the mystery,” but more likely are simply a phonetic rendering of a word which no longer had a transparent meaning in contemporary speech. In some cases, the name is even written non-etymologically as “Horus the merchant,” which sounds quite similar in actual pronunciation (Quack, 1994; Goebs, 1995). He receives the epithet, “the southern star of the sky.”

Much clearer is the name of Saturn, which in the fullest form is “Horus bull of the sky”; in the Late Period normally shortened to “Horus the bull.” He is called the “eastern,” or in some cases “western” star.

Mars is, in earlier attestations, often called “Horus of the horizon,” which is also a relatively well attested god’s name outside of astronomy. Besides this, mainly in late sources, there is the form “Horus the red one”—the most transparent and logical of all Egyptian planet names. His epithet is “eastern star,” with the additional note “he travels backwards.”

Venus is normally called either “the phoenix bird” or “the heron bird” and linked with the god Osiris. All these beings are also attested in other contexts. Only in the Late Period is the name “the morning star” applied to her with certainty (but see “Possible Attestations of Specific Planets in Other Contexts”). She receives the epithet “the crossing star.”

The name of Mercury, *sbq.w*, and due to phonetic developments later also *swg3*, is of totally unknown meaning. There is a possible connection of this name with biblical Hebrew *sekwi* in Job 38, 36 where the word is used in parallelism with “Ibis” in connection with wisdom, and thus is likely to have a relation to the Egyptian god Thot (probably also present in phonetic rendering in this passage), who is the counterpart of Greek Hermes and Latin Mercury (Pope, 1973, p. 302; von Lieven, 1999, p. 125, note 261). An individual note in one subtype of images of this form, especially from the Ramesside Period, should also be mentioned. It is given for Mercury and says,

“Seth in the evening twilight, a god in the morning twilight” (Neugebauer & Parker, 1969, p. 180). This implies that the identity of Mercury as an evening and morning star was recognized, even though he was evaluated somewhat differently from a religious perspective, depending on his phase.

Overall, all three outer planets are linked to different forms of the falcon-headed god Horus, especially connected with royalty. Venus is linked with his father Osiris, and Mercury with Seth, the brother, enemy, and killer of Osiris, who killed him. Given also that the Sun and Moon are masculine in Egyptian conception, this means that the moving celestial bodies are conceived exclusively as male entities in Ancient Egypt, quite in contrast to many other ancient cultures.

The epithets of the planets do not contain anything that gives essential and permanent characteristics for any single planet; they would be possible for any of them at certain times. Rather, they are indications of actual stages at specific moments. For reasons which cannot exactly be explained, such a depiction with ephemeral captions became codified as the classical sky image in Egypt for a very long time.

The iconography associated with the planets in the older monuments gives the three outer planets as human figures with falcon heads, clearly presenting the normal shape of the god Horus with whom they are associated. Venus is regularly shown in the form of a heron bird. Seth as Mercury is depicted as an anthropomorphic deity, often with the head of his specific animal (which is zoologically not yet identified with certainty, perhaps an aardvark); he is often depicted on a smaller scale than the other planetary deities, probably because as the murderer of Osiris, he has a negative connotation in the funerary domain (from which many of the preserved monuments come). His image can also be replaced by that of his victorious rival Horus, or deliberately left incomplete in the head, or omitted altogether on purpose.

In the temples of the Greco-Roman Period in Egypt, the planets are often depicted in combination with the zodiac. They are typically shown where they have, according to the astrological theories en vogue at that time, either their hypsoma (place of highest power) or their day- and night-house (Boll, 1903, pp. 232–244; Neugebauer, 1942, p. 122, note 1; Neugebauer & Parker, 1969, p. 203ff.). This position is also, according to the astrological theory of the *thema mundi* (Raffaelli, 2001), the position they had at the moment of the birth of the world, and thus their depiction constitutes sort of a horoscope of the world, which is quite fitting for public monuments.

For one particularly important monument, the round zodiac of Dendara, some scholars (especially Aubourg, 1995; Aubourg & Cauville, 1998; Cauville, 2013, p. 539ff.) have tried to recognize specific real planetary positions in the depiction which could be used for ascertaining an absolute date in July, 50 BCE. However, sober consideration clearly shows that the placement of the planets in the different zodiacal signs is due to astrological considerations (von Lieven, 2000, p. 157ff.; Hübner, 2013, p. 45), and the proposed date is unlikely in the light of the building history of the temple (Zignani, 2010, pp. 39–41). In the rectangular zodiac of the hypostyle hall of the temple of Dendara, the planets are combined not only with the zodiacal signs and some extra-

zodiacal constellations, but also with personifications of the hours of the night and the day. On private monuments, especially coffins and tomb ceilings, the planets can be shown in their positions at the birth of the owner and thus indicate his personal horoscope.

Besides depictions on the ceiling, all five planets, together with the most important stars and constellations (Sirius and Orion), appear in the temple of Dendara, also on the walls of a certain chapel of the late temples, called *wabet* (Coppens, 2007), and linked with rituals concerning the New Year (Dendara IV, p. 215ff.; Cauville, 2001, p. 352ff., 449).

On the late monuments, the iconography of the planets shows more variation than previously (Figures 2–6); also, the names can change for some of them (see this section). Saturn can be a bull-headed instead of a falcon-headed deity, Mars can be simply human-headed instead of falcon-headed, and Mercury can also be simply human-headed. Venus can occasionally be two-headed, with either two human heads or one human and one falcon head, or even be simply falcon-headed, in accordance with her late identification with Horus, son of Isis (see “Possible Attestations of Specific Planets in Other Contexts”). In the temple of Esna, influence of Greek iconography can be seen in the depiction of Mars (with a Greek army helmet; Figure 7) and Jupiter (holding bow and arrow in a way reminiscent of a Greek lightning bolt; Figure 8) (von Lieven, 2000, p. 158).



Figure 2. Saturn on the ceiling of the Temple of Dendara. Private image.



Figure 3. Jupiter on the ceiling of the Temple of Dendara. Private image.



Figure 4. Mars on the ceiling of the Temple of Dendara. Private image.



Figure 5. Venus on the ceiling of the Temple of Dendara. Private image.



Figure 6. Mercury on the ceiling of the Temple of Dendara. Private image.



Figure 7. Mars on the ceiling of the Temple of Esna. Private image.



Figure 8. Jupiter on the ceiling of the temple of Esna. Private image.

On the west (night) side of the hypostyle hall ceiling at Dendara (Figures 9–13) and (for most planets) in the zodiacal tomb of Athribis (Figures 14 and 15), the planets are shown basically in a bird form. Saturn has the head of a bull, corresponding to his traditional Egyptian name “Horus, bull of the sky.” Jupiter has the head of a falcon with two cow’s horns, a disc, and two feathers between them (Dendara) or simply two horns (Athribis). Mars has the head of a falcon with the Upper Egyptian crown (Dendara; Cauville, 2013 [p. 535, 538] has confused Jupiter and Mars) or can be a falcon with the tail of a snake (Athribis). Mercury is depicted with the head of an ape, showing a connection with the god Thoth (the Egyptian equivalent of Hermes), who is typically

associated with an ape. The head of Venus is damaged and difficult to recognize in Dendara (it seems to involve the Upper Egyptian crown); Athribis in this case does not have a bird form but shows a two-headed man.



Figure 9. Saturn as a bird on the ceiling of the Temple of Dendara. Private image.



Figure 10. Jupiter as a bird on the ceiling of the Temple of Dendara. Private image.



Figure 11. Mars as a bird on the ceiling of the Temple of Dendara. Private image.



Figure 12. Venus as a bird on the ceiling of the Temple of Dendara. Private image.



Figure 13. Mercury as a bird on the ceiling of the Temple of Dendara. Private image.



Figure 14. Ceiling of the Zodiac tomb, Athribis. After <http://www.ucl.ac.uk/museums-static/digitalegypt/athribis/zodiac.gif> <http://www.ucl.ac.uk/museums-static/digitalegypt/athribis/zodiac.gif>.



Figure 15. Ceiling of the Zodiac tomb, Atribis. After <http://www.ucl.ac.uk/museums-static/digitalegypt/atribis/zodiac2.gif> <<http://www.ucl.ac.uk/museums-static/digitalegypt/atribis/zodiac2.gif>>.

A quite new sequence of the planets as well as religious interpretation is attested in a demotic Egyptian ostrakon (Strasbourg D 521) dating probably to the late Ptolemaic or early Roman Period, but probably based on an early Ptolemaic model (Spiegelberg, 1902). It gives Horus the bull (i.e., Saturn): the star of the Sun; Horus the red one (i.e., Mars): the star of Miysis (“the fierce lion”); Mercury: the star of Thoth; the morning god (i.e., Venus): Horus, son of Isis; Horus the mysterious one (i.e., Jupiter): the star of Amun. The sequence as such is likely to be based on astrological considerations, where Saturn and Mars are normally maleficent planets, Venus and Jupiter benevolent ones, and Mercury changing according to the situation. The deities linked to the individual planets are probably an *interpretatio aegyptiaca* of the Mesopotamian planetary divinities rather than the Greek ones (see also Ross, 2007, pp. 13–15). At least the identification of Horus, the son of Isis, with the planet Venus is also attested in the round zodiac of Dendara (Dendara X, 175, pp. 3–4; Cauville, 1997, p. 79ff.).

Special Treatises about Planets and Their Religious Meaning?

It is still disputed whether there is a “planet chapter” within the *Fundamentals of the Stars*, an important Egyptian compendium describing celestial phenomena and often expressing them in mythological terms. Von Lieven (2007, pp. 107–119, 190–201; 2012, p. 120ff.) is in favor of such an identification, while Leitz (2008/2009, pp. 17–19) disagrees and wants to interpret the section in

question as referring to the Moon. In any case, the section is so deeply steeped in mythological allusions, and also seems so garbled in the copies available, that it is hardly possible to make much sense out of it. The section in question is attested from the 19th dynasty (ca.1300 BCE) onward but likely to go back to a substantially earlier archetype.

There is also some mention of the five planets in a very fragmentary text which correlates religious entities of the Memphite region with several celestial phenomena (Quack, 2004, p. 476, 478, 483). It seems to mention at least their risings and settings, and probably also their specific movement. The only extant manuscript dates to the Roman Period (2nd century CE), and given the late language of the text, the composition is unlikely to be substantially older.

Possible Attestations of Specific Planets in Other Contexts

Given that the expressions serving as normal religious designations of the planets are also attested in other contexts than the astronomical decorations (especially those of Venus and Mars), the question has to be posed if they are also to be understood as planets in those contexts. This question is of fundamental importance because whether the Egyptians in pre-Ptolemaic times paid more attention to the planets than just mentioning them briefly in the classical sky image hinges on it.

In the Pyramid Texts and the Coffin Texts, a “bull of heaven” is mentioned several times. Already Brugsch had supposed that this could be understood as the planet Saturn, and he equally proposed that the “morning god” of these texts was Venus (Brugsch, 1891, p. 322). Rolf Krauss has more recently taken up the question at least for the morning god and has argued that, given the association with the eastern sky in the morning, he should really be considered as the planet Venus (Krauss, 1997, pp. 216–234). This is a possibility, but the evidence is hardly cogent, and an explanation would be needed why the older astronomical monuments never use morning god for the planet Venus.

Coffin Text spell 340 has the “phoenix” associated with the morning god (CT IV, 340d–341b), and thus strengthens the option that both expressions are used specifically in connection with the planet Venus. This spell is later continued as *The Book of the Dead* (BD),⁵ Chapter 122, discussed in a quite insufficient way by Stracmans and Libon (1947, p. 10).

Concerning the use of the term *morning god* for the planet Venus, a previously misunderstood (lastly by Beck [2018], pp. 42–47) passage in the magical Papyrus Leiden I 343 + 345, rt. V, 12–13 (ca. late 14th or early 13th century BCE) may be of further help. There, the ritualist says “I will say to the morning god and well-being-and-health,” and these expressions are a rendering of the Levantine pair of deities Šaḥar and Šalim, who stand for the morning and evening stars (Quack, in press). At least if these two expressions are not used randomly for any star that happens to be bright in the morning and evening, but reserved for the inner planets, they attest a labeling of either Mercury or more likely Venus as morning star in Egypt during the New Kingdom.

Furthermore, at least in the Late Period, consideration must be taken of the “lone star” (*sb3 wʿ.ti*), which is attested in some passages (especially Edfou I, 358,11, right and Edfou VI, 130,5–131,1) as the counterpart of the “morning god.” Thus it would likely be a designation of the evening star which could be a planet, especially Venus (Brugsch, 1883, pp. 73–76). However, the situation is complicated by the fact that the lone star is clearly attested as a decan in the Tanis family (Neugebauer & Parker, 1969, p. 144) and thus likely to be a fixed star. For the attestations in the Pyramid Texts, Krauss (1997, pp. 104–114) has proposed to identify the lone star with Capella. Obviously further research is needed for clarification.

A stairway of Mercury is mentioned in the Coffin Texts CT VII 261a (spell 1030), a spell for traveling in the great barque of the Sun god. Most versions from the Middle Kingdom write Mercury clearly like the planet (Sherbiny, 2017, p. 123ff.). In the New Kingdom and later, this spell appears somewhat reworked as BD Chapter 136A, where many manuscripts have replaced Mercury with different words (Wagner, 2016, p. 92, note 25, p. 99), probably because Mercury is related in Ancient Egypt to the god Seth who killed Osiris, and thus is not very fitting in a funerary context.

Von Lieven (2007, p. 127, note 746) has proposed to recognize the oldest attestation of Horus the red one as designation of Mars already in CT VII 118f. However, the overall structure of the passage makes it more likely that the segmentation is different, and one has to understand “I have brought . . . the eye to Horus, and the red crown to The Magician” (Carrier, 2004, p. 1950ff.).

Some other possible cases worth mentioning are found in the Book of the Dead. BD (Chapter 13, p. 1ff.) was already mentioned by Brugsch (1856, p. 50) and de Rougé (1856, p. 27) as a possible candidate for mentioning the planet Venus. The text, spoken by the beneficiary himself, says “As I have entered as a falcon, so I have come forth as a phoenix. God of the morning, make way for me!” The obvious problem of the passage is that, at least if it is segmented as proposed here in accordance with the more recent translations, it makes use of two potential candidates for the planet Venus, namely the phoenix and the morning god, as two different parties.

BD Chapter 109 was also mentioned by Brugsch (1856, p. 50; 1883, p. 72ff.) and de Rougé (1856, p. 27) as well as Stracmans and Libon (1947, p. 10) concerning Venus. It is about knowing the religious entities of the east. Among them, we find Horus of the horizon (who may be Mars) and the “god of the morning” (who may be Venus), but also a calf.

An illustrative example of the possibilities and at the same time uncertainties is constituted by BD Chapter 100/129. Normally, this has the first line “I have ferried the phoenix to the east.” This includes one name which is used for the planet Venus, but hardly limited to it. However, a version in the tomb of Nefersekheru at Zawyet Sulṭan of the Ramesside Period (13th century BCE) gives a longer variant: “crossing over with the phoenix, so that I can see Horus of the horizon” (Osing, 1992, p. 65, plate 42). Here, we have a second name which is positively attested as the designation of a planet, namely for Mars, and this duplicity lends some plausibility to the idea that this passage is really about planetary motions, perhaps involving a conjunction of Venus and Mars.

A phrase involving the phoenix in Papyrus Anastasi I 4,5, a “satirical letter” used extensively in the Ramesside Period scribal training (Fischer–Elfert, 1986), may be understood as reference to the planet Venus (Krauss, 1993). The passage in question follows almost directly after a reference to justification in the sky and probably a mention of stars, and it reads “may you make your transformation as you wish, like the phoenix. All your forms are in accordance with your [desire (?)].” If the phoenix is understood here as a role model for different transformations, the passage could refer to the different phases of Venus.

In the context of an Osirian glorification attested on a wooden tablet of the later 1st millennium BCE, there is a phrase “your name is flourishing like Mercury,” and here the very specific name *sbq* of this planet leaves hardly any leeway for different interpretations (Kucharek, 2017, p. 202, 204). This sentence is directly juxtaposed to “and rejuvenated like the moon,” which gives additional weight to a celestial interpretation.

A passage among the religious inscriptions on the sarcophagus of Ankhnesneferibre speaks of the deceased one appearing in the sky together with seven discs, and these are likely to be the planets, Sun, and Moon (von Lieven, 2001, p. 277ff.; Wagner, 2016, p. 302, 304).

Rolf Krauss has interpreted a number of texts with a mention of the “eye of Horus” as references to the planet Venus.⁶ There is no sound basis for his assumptions, especially since Venus in older Egyptian astronomical texts is clearly linked with Osiris, not with Horus. The eye of Horus is correlated with the Moon and its phases by the ancient Egyptians; indeed for a number of texts which Krauss has adduced for his interpretation, closer investigation of their context makes it clear that they speak about the Moon, not Venus (von Lieven, 2007, p. 179ff.).

Finally, from a period (late 2nd to early 3rd century CE) when the relevance of the planets was generally quite dominant, there is a mention of a specific scarab of the planet Mars (pMag. LL 21,10; for the reading, see Ritner, 1986, p. 102ff.). Such a designation has to be understood in opposition to other types of scarabs linked with either the Sun or the Moon in contemporary conception.

Tables and Calculations for Planets

In the Greco–Roman Period, some planetary tables and calculations in demotic Egyptian script are preserved. They have to be considered together with contemporary Greek–language texts from Egypt preserved on papyri (Jones, 1999a, 1999b). Known for the longest time are two sets of tables giving the entry dates for planets into new zodiacal signs (Neugebauer, 1942). One of them, Papyrus Berlin P 8279 + 23547 (for the additional fragment, see Hoffmann, 1999), covers the years 17 BCE to 12 CE, making use of the traditional Egyptian calendar. The other one is written on four preserved wooden tablets (several more are lost), the so–called Stobart tables (now in Liverpool), covering with some lacunae the years 63 to 140 CE, and making use of the Alexandrian calendar. By now, it is clear that these tables were calculated, not observed. There have been considerable discussions as to whether they were making use of Babylonian mathematical astronomical systems. Especially van der Waerden (1947, 1960, 1972) and Abraham (1984) were

in favor of such a historical connection (sometimes deduced indirectly by attestations of supposed Babylonian methods in Indian sources), while Neugebauer (1975, p. 789ff.) was more skeptical, even if acknowledging that the demotic Egyptian tables show a much greater affinity to Babylonian mathematical approaches than to Greek cinematic theories.

Of particular interest are two recently published ostraca in the demotic Egyptian language dating from the 1st century CE and indicating calculating procedures for Mercury, adapting the Mesopotamian systems A_1 and A_2 in a special way by using A_1 only for the calculation of evening first and morning first, and A_2 for the calculation of evening last and morning last (Ossendrijver & Winkler, 2018). The ostraca indicate a cycle of a “great year” (misread as “great place” in Ossendrijver & Winkler, 2018, p. 386, 391), which for the evening first (calculated according to A_1) contains 1,513 appearances of Mercury in 480 (years), and for the morning last (calculated according to A_2) 1,223 settings in 388 (years); and these are indeed the periods attested in the Mesopotamian sources (Neugebauer, 1975, p. 466); the first one also in Greek sources (Neugebauer & Parker, 1969, pp. 237–240; Neugebauer, 1975, p. 605). The ostraca divide the zodiac into several sections traversed by Mercury with different, abruptly changing speed and a defined number of elementary steps. In contrast to the Babylonian methods, these ostraca do not contain the “pushes” (additive or subtractive distances applied to the planet phenomena), and also no instructions for calculating time. Mesopotamian background can also be seen in the use of sexagesimal notation for the fractions of degrees.

Also, a table covering the day by day progress of Mercury in an arithmetical sequence of the second order is attested on a demotic Egyptian papyrus fragment (Papyrus Carlsberg 32; Neugebauer & Parker, 1969, p. 240ff.). The method of computing seems quite similar to Babylonian tables. Here also, sexagesimal notation is used.

A procedure text involving Jupiter and Saturn (Neugebauer & Parker, 1969, pp. 250–252) is so badly preserved that not very much can be deduced from it. There is also one still unpublished substantially preserved procedural text about the phases of Venus coming from Tebtunis.

The symbols for the planets used in the Greek papyri and lying at the root of our modern planetary symbols (Jones, 1999a, p. 62ff.) are for Saturn and Jupiter clearly abbreviations of the Greek names, but at least one, namely that for Venus, is likely to be based on a demotic form, perhaps also that for Mars (Quack, 2018, p. 78ff.), while that for Mercury remains uncertain.

A few classical authors mention the Egyptians as scholars who observed the planets. Aristoteles, *Meteorology* I, VI (343 b) tells of Egyptian observations of planets, including conjunctions of two planets and planets with a star. Also, in *De Caelo* II, 12 (292 a), he speaks of the observation of the occultation of planets by the Moon observed by those devoted since very many years to such observations, namely the Egyptians and Babylonians. Diodorus I, 81, 4–6 also indicates intense astronomical records by the Egyptians and their claim that the Babylonian Chaldaeans were Egyptian colonists and got their renown as astrologers from knowledge learned from Egyptian priests. Clemens of Alexandria, *Stromateis* VI, 4, 35, 3–36, 1 indicates, in a detailed section about priestly scholars in Egypt, four astronomical books as being under the control of the *horoscopus* (hour-watcher). One of them treats the arrangement of the planets. Modern scholars have shown little confidence in the reliability of such information of supposed high-quality astronomy in

Ancient Egypt (e.g., Neugebauer, 1942, pp. 236–239). Still, the extant documents at least show that in the Late Period there was a very real Egyptian occupation with planets, their phases, and their movement, even if the mathematical models used for it are likely to be derived from Babylonia (Hoffmann, 2014, pp. 80–88).

Astrological Treatises and Horoscopes

There are a substantial number of preserved demotic Egyptian astrological treatises of which, however, little is published as of 2019 (Winkler, 2009).⁷ The standard order of the planets in them is from the slowest planet (the one with the highest orbit) to the fastest one (with the lowest orbit). Therefore the sequence is Saturn, Jupiter, Mars, Venus, and Mercury. This is called “Chaldaean order,” although it is uncertain if it is really Mesopotamian in origin.

When the beginning of demotic Egyptian astrological treatises is preserved, they are in most cases attributed to the divine sage Imhotep (who is ultimately based on an important historical figure of the 3rd millennium BCE). In several cases, they are supposed to have been discovered by a priest called Petese and brought to the king Nechepsos, who is historically Necho II of the Saïte dynasty (Ryholt, 2011; Quack & Ryholt, 2019). Such Egyptian traditions lie at the base of Nechepso and Petosiris as fundamental figures in Hellenistic astrology. While some of the actual astrological techniques can be traced back to Mesopotamian predecessors, it is obvious that astrology, including the treatment of the planets, took decisive shape in Greco-Roman Egypt.

The treatises comprise some general definitions of the planets, their overall nature, their places of highest and lowest power, and their houses in the zodiac. There are also tables of terms, allocating certain degrees of a zodiacal sign to a specific planet. Ptolemy, *Tetrabiblos* I, 24, presents two known sets, one supposedly Chaldaean, the other one supposedly Egyptian. He himself prefers a third solution which he claims to have found in an ancient, partly unreadable book. The Egyptian one is that which dominates in the Greek and Latin treatises, as well as the actual horoscopes. The only published demotic Egyptian table of terms curiously deviates from everything known up until now (Bohleke, 1996).

Papyrus Cairo CG 50143 (Spiegelberg, 1932, p. 105ff., plate 59) has remnants of what seems to be a combination of such basics with actual forecasts. It indicates Mercury as “sixth god” and gives the zodiacal signs of his triplicity. The number given would point to a sequence of the planets where the two luminaries were included in the sequence; thus, Mercury is sixth, and the Moon would be the seventh. Formulations such as, “[. . .] good property; he will happen in [. . .]” ($x+1$, $x+2$) show how predictions were intermingled within this section.

A poorly preserved astrological text in the unpublished Papyrus Carlsberg 4 recto may treat special situations of the planets (e.g., close conjunctions with the Moon or rising in the East and their effects for prognoses), but the text is too fragmentary to base much on it.

Otherwise, the dominant factor involving the planets in these astrological treatises is the position of the planets in either the zodiacal signs or the astrological “houses” of the dodecatropos. Two published fragmentary manuscripts of this type are pBerlin P 8345 (Hughes, 1986; Quack, 2008,

pp. 368–370; a small unpublished additional fragment of the manuscript is preserved in the papyrus collection of Heidelberg) and pVienna D 6614 (misunderstood in the first edition by Reymond, 1977, pp. 143–157; for corrections in understanding, see Smith, 1985, p. 112ff.).

Besides the prognoses for individuals, there are also astrological treatises covering the fate of the king and the whole land. A typically Egyptian procedure is the observation of the heliacal rising of Sirius, which had a special relevance for Egypt because its date coincided more or less with the onset of the annual inundation of the Nile which was essential for agricultural fertility. There is a substantial body of preserved manuscripts, most of them unpublished (Quack, 2017a). In most cases, the position of the planets in the zodiacal signs is the determining criterion for the forecasts.

In Papyrus BM EA 10651, there are prognoses for the fate of the country structured for periods of 10-day units, and the basic features used are solar and lunar eclipses, but also risings of Mercury occurring during these periods (Quack, 2017a, p. 193, 204ff.). Also, in the badly preserved Papyrus BM EA 10661, Mercury and Jupiter play a role in similar predictions (Quack, 2017a, p. 194, 206).

There is also a magical practice found in a very late papyrus (turn from the 2nd to 3rd century CE) which aims at finding the position of planets that is fitting for undertaking a project (pMag. LL. rt. 4, 1–22; see Quack, 2008, p. 339ff.).

On one late demotic ostrakon (ostrakon Medinet Madi 1229; 3rd century CE), different colors are ascribed to the individual planets (Menchetti & Pintaudi, 2007, pp. 230–232, 263).

A number of actual demotic Egyptian horoscopes are preserved (Neugebauer, 1942; Quack, 2018, pp. 100–103). Normally they give the position of the planets in the signs of the zodiac without any further explicit comment. In one case (ostrakon Glasgow Hunterian Museum 1925.96; Quack, 2008/2009), the positions get the brief note “it is good.” A particularly vivid picture of priests at an Egyptian temple working as astrologers, casting horoscopes, and calculating planet positions can be gained from a great lot of ostraca found at Narmouthis (Medinet Madi) and dating to the 2nd and 3rd century CE; an overall presentation (not free of problems in reading and translation) is given by Menchetti (2009).

Papyrus London 98 is the so-called Old Coptic Horoscope (Černý, Kahle, & Parker, 1957). It mixes Greek and Egyptian language (in an early form of the Coptic script; see Quack, 2017b, pp. 60–62). While the text starts as an individual horoscope, ultimately it copies sections from an astrological manual including the power of the planets and the phases of life during which a particular planet is in command.

Reception of Egyptian Planet Sequences, Terms, and Religious Connotation by Classical Authors

Achilles, *Isagoge*, Chapter 16 indicates a specific Egyptian sequence of the planets which deviates from the standard only in placing Sun and Moon at the very end of the sequence instead of integrating them into the sequence of orbits. The same author, in Chapter 17, gives specific

Egyptian interpretations for the planets, namely Saturn: Star of Nemesis; Jupiter: Star of Osiris; Mars: Star of Herakles; Mercury: Star of Apollo (the indication for Venus got lost in the manuscript transmission). While this obviously deviates from the Greek standard and shows an Egyptian flavor by naming Osiris, the link with the preserved Egyptian documents is far from easy. The association of Saturn with Nemesis should be fairly correct for Roman Period Egypt, since Nemesis, or rather the Egyptian form *Petbe*, “the retribution,” is identified with Kronos. More complicated is the situation for Jupiter. Maybe the old designation *Hr wpš-t3.wi/wpi št3.w* for the planet was confused with *Hr wpi š'.t-t3.wi* “Horus who judges the massacre of the two lands,” a typical epithet of Osiris. The equivalence of Mars and Heracles is also given by several authors as a possible alternative without ethnic attribution.

In the hermetic treatise *Kore Kosmou*, 28, Sun and Moon are placed at the very beginning (quite the opposite to the indication of Achilles), but otherwise the sequence follows the “Chaldaean” order. Macrobius, *In Somn. Cic. I*, 19, 2 (early 5th century CE) gives a specifically Egyptian sequence only for the inner section where there is disagreement between the different traditions. According to his indication, for the Egyptians Moon and Sun come before the planet sequence proper, beginning with Venus and Mercury (Armisen-Marchetti, 2001, p. 103, 187ff.).

There is a tradition of designating the planets in Greek descriptive terms (Cumont, 1935). According to the Byzantine chronologist Malalas, the Egyptian priest and historian Manetho titled some of them in a special way; especially his names *Λάμπων* (*light-giver*) for Jupiter and *Κάλλιστος* (*the most beautiful one*) for Venus are not known in other sources.

The Egyptian name of Mars is preserved in a phonetic rendering by Vettius Valens, *Anthologiai VI*, 3, 7 as *Ἀρτης, and similarly as Ἑρτωσί in Johannes Lydus, *De Mensibus IV*, 34. It is at least possible that an Egyptian planet name is hiding behind the form *σεχές*, which Hesychius considered to have derived from the Babylonian word for the Star of Mercury. It could instead be derived from the demotic Egyptian form *swg3*.

An astrological lapidary is transmitted under the name of Damigeron and Evax (Quack, 2001). This text is likely to be the product of an Alexandrian tradition mixing Greek and Egyptian concepts. It indicates magical images to be engraved on ring stones. Mostly, it describes only the images, but the gods behind them can be recognized fairly easily. The religious associations we find here are: Sun: scarab (Re); Moon: Isis (?) with cow horns; Mars is lost; Jupiter: goat (Amun); Venus: Venus; Mercury: dog-ape (Thoth); Saturn: crocodile-headed god (Sobek). The last case follows an Egyptian tradition of equating Sobek with Geb, who in turn was thought of as the equivalent to Kronos (Kockelmann, 2017, pp. 173–179). All things considered, this composition gives Egyptian gods, or the animals connected to them, but the basic concepts follow the Hellenistic norm. Compared to the situation made evident by the ostrakon Strasbourg 521, here is evidence of a more deeply seated reformulation of the religious significance of the planets.

The Gnostic treatise called *Pistis Sophia*, transmitted in Coptic language, but probably translated from a Greek original, contains substantial astrological lore (von Lieven, 2002), and in Book IV, Chapters 136–137 gives indications about the planets which seem to contain some Egyptian background. It gives the same order of Saturn, Mars, Mercury, Venus, and Jupiter as the ostrakon Strasbourg 521 (see “Names, tutelary deities, and iconography of the planets on monuments with

astronomical decoration”). The two sets of strange names indicated as forces linked to the planets as well as their incorruptible names may contain garbled Egyptian expressions (Quack, 2018, p. 88). In addition, in Chapter 140 of that work, Venus is called Boubastis, which is the name of an Egyptian goddess connected with love.

Conclusion

The visible planets were known fully in Egypt from early times on. However, for a long time they played a rather minor role, especially being confined to appearing within the context of a decoration scheme aiming at assembling the important features of the night sky. A great deal of research still needs to be done concerning the question to which degree individual planets are mentioned in the texts outside this image, and if there are specific terms for “planets” already in earlier times.

Important changes came about in the Late Period, to a good degree under Mesopotamian cultural influence. On the one hand, sophisticated mathematical procedures for calculating the positions and phases of planets were adopted. On the other hand, astrology developed its classical set of techniques in Greco-Roman Egypt. This meant that significantly more importance was attributed to the planets. On public monuments, they could be depicted in the position they supposedly had at the moment of the birth of the world and in which they had their greatest power, while on private monuments they could show the individual horoscope of the owner. Also, the iconography and the attribution to deities underwent changes which can at least partially be attributed to Mesopotamian conceptions. It is quite remarkable that the Egyptian culture, which is in contemporary times often seen as quite static, and especially in the later periods rather closed and xenophobic, did not have any difficulties at all embracing new techniques and ideas in this area.

Much research still remains to be done, especially concerning the demotic Egyptian astrological treatises transmitted in papyri. Their future edition, translation, and commentary is likely to shed important new light on the history of astrology and the different cultural traditions behind it. In any case, with the current documentation for demotic Egyptian procedure texts, planetary tables, and astrological treatises, it becomes more understandable why several Greek and Latin authors attributed high astronomical competence to the Ancient Egyptians. Even if frequently the knowledge about these techniques ultimately derives from Babylonia, it cannot be doubted that it was applied also by Egyptians, and it is even possible that the encounter of the Greeks with Babylonian astronomical concepts was in some cases via an Egyptian intermediary.

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Notes

1. For the early discussions about this monument, see Buchwald and Josefowicz (2010).
2. See critically for most of these proposals, Quack (in preparation, Chapter 1.1).
3. The Pyramid Texts are a large corpus of religious texts engraved on the walls of the inner chambers of pyramids of the later Old Kingdom (later 3rd millennium BCE), mainly concerned with securing the afterlife of the Egyptian kings.
4. The Coffin Texts are a large corpus of religious texts mainly written on the inner sides of wooden coffins of the Middle Kingdom (end of the 3rd and early 2nd millennium BCE); a substantial number among them continue textual traditions of the Pyramid Texts.
5. The *Book of the Dead* is a collection of funerary spells of which a good part stands in the tradition of Coffin Text spells.
6. Krauss (1990, 1997, pp. 261–274, 2002, 2008). See the skeptical reaction by Allen (2002, p. 64).
7. The survey of demotic Egyptian astrological texts (treatises as well as actual horoscopes) by Ross (2007) is somewhat incomplete even for the published ones, and not rarely out of date for the intricate philological details.

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